

In The Claims:

Please cancel, without prejudice, claims 6 and 15.

Please amend the remaining claims as follows:

- 1 1. (currently amended) A disk drive comprising:
 - 2 (a) a first disk surface and a second disk surface;
 - 3 (b) an actuator arm;
 - 4 (c) a first head coupled to a distal end of the actuator arm and positioned over the first
 - 5 disk surface;
 - 6 (d) a second head coupled to a distal end of the actuator arm and positioned over the
 - 7 second disk surface;
 - 8 (e) a primary actuator for rotating the actuator arm about a pivot in coarse movements;
 - 9 (f) a first secondary actuator coupled to the actuator arm for actuating the first head over
 - 10 the first disk surface in fine movements;
 - 11 (g) a second secondary actuator coupled to the actuator arm for actuating the second head
 - 12 over the second disk surface in fine movements;
 - 13 (h) a servo controller for:
 - 14 generating a first control signal applied to the first secondary actuator to position the
 - 15 first head over the first disk surface in fine movements while accessing the first
 - 16 disk surface; and
 - 17 phase shifting the first control signal by a predetermined phase to generate a second
 - 18 control signal applied to the second secondary actuator to attenuate excitation of
 - 19 at least one arm vibration mode,
 - 20 wherein:
 - 21 the first secondary actuator is coupled to a first side of the actuator arm;
 - 22 a first linkage extends along the first side of the actuator arm and couples the first
 - 23 secondary actuator to the first suspension;

24 the second secondary actuator is coupled to a second side of the actuator arm; and
25 a second linkage extends along the second side of the actuator arm and couples
26 the second secondary actuator to the second suspension.

1 2. (original) The disk drive as recited in claim 1, wherein the primary actuator comprises a
2 voice coil motor.

1 3. (original) The disk drive as recited in claim 1, wherein the first and second secondary
2 actuators comprise a piezoelectric element.

1 4. (original) The disk drive as recited in claim 1, further comprising:
2 (a) a first suspension comprising a base end coupled to the actuator arm and a distal end
3 coupled to the first head; and
4 (b) a second suspension comprising a base end coupled to the actuator arm and a distal
5 end coupled to the second head, wherein:
6 the first secondary actuator applies an actuating force to the base end of the first
7 suspension; and
8 the second secondary actuator applies an actuating force to the base end of the second
9 suspension.

1 5. (original) The disk drive as recited in claim 4, wherein:
2 (a) the first secondary actuator is coupled to the actuator arm proximate the base of the
3 first suspension; and
4 (b) the second secondary actuator is coupled to the actuator arm proximate the base of the
5 second suspension.

1 6. (canceled)

1 7. (original) The disk drive as recited in claim 1, further comprising:
2 (a) a first mounting bracket for mounting the first head and a second mounting bracket
3 for mounting the second head;
4 (b) a first suspension comprising a base end coupled to the actuator arm and a distal end
5 coupled to the first mounting bracket; and
6 (c) a second suspension comprising a base end coupled to the actuator arm and a distal
7 end coupled to the second mounting bracket, wherein:
8 the first secondary actuator applies an actuating force to the first mounting bracket;
9 and
10 the second secondary actuator applies an actuating force to the second mounting
11 bracket.

1 8. (original) The disk drive as recited in claim 1, wherein the predetermined phase is
2 approximately 180 degrees to attenuate excitation of an arm torsion mode.

1 9. (original) The disk drive as recited in claim 1, wherein the predetermined phase is
2 approximately zero degrees to attenuate excitation of an arm sway mode.

1 10. (currently amended) A method of attenuating excitation of at least one arm vibration
2 mode in a disk drive, the disk drive comprising a first disk surface and a second disk
3 surface, an actuator arm, a first head coupled to a distal end of the actuator arm and
4 positioned over the first disk surface, a second head coupled to a distal end of the actuator
5 arm and positioned over the second disk surface, a primary actuator for rotating the
6 actuator arm about a pivot in coarse movements, a first secondary actuator coupled to the
7 actuator arm for actuating the first head over the first disk surface in fine movements, and

8 a second secondary actuator coupled to the actuator arm for actuating the second head
9 over the second disk surface in fine movements, the method comprising the steps of:
10 (a) generating a first control signal applied to the first secondary actuator to position the
11 first head over the first disk surface in fine movements while accessing the first disk
12 surface; and
13 (b) phase shifting the first control signal by a predetermined phase to generate a second
14 control signal applied to the second secondary actuator to attenuate excitation of at
15 least one arm vibration mode,

16 wherein:

17 the first secondary actuator is coupled to a first side of the actuator arm;
18 a first linkage extends along the first side of the actuator arm and couples the first
19 secondary actuator to the first suspension;
20 the second secondary actuator is coupled to a second side of the actuator arm;
21 a second linkage extends along the second side of the actuator arm and couples the
22 second secondary actuator to the second suspension.

1 11. (original) The method as recited in claim 10, wherein the primary actuator comprises a
2 voice coil motor.

1 12. (original) The method as recited in claim 10, wherein the first and second secondary
2 actuators comprise a piezoelectric element.

1 13. (original) The method as recited in claim 10, wherein the disk drive further comprises a
2 first suspension comprising a base end coupled to the actuator arm and a distal end
3 coupled to the first head and a second suspension comprising a base end coupled to the
4 actuator arm and a distal end coupled to the second head, the method further comprising
5 the steps of:

- 6 (a) the first secondary actuator applying an actuating force to the base end of the first
7 suspension; and
8 (b) the second secondary actuator applying an actuating force to the base end of the
9 second suspension.

- 1 14. (original) The method as recited in claim 13, wherein:
2 (a) the first secondary actuator is coupled to the actuator arm proximate the base of the
3 first suspension; and
4 (b) the second secondary actuator is coupled to the actuator arm proximate the base of the
5 second suspension.

1 15. (canceled)

- 1 16. (original) The method as recited in claim 10, wherein the disk drive further comprises a
2 first mounting bracket for mounting the first head and a second mounting bracket for
3 mounting the second head, a first suspension comprising a base end coupled to the
4 actuator arm and a distal end coupled to the first mounting bracket; and a second
5 suspension comprising a base end coupled to the actuator arm and a distal end coupled to
6 the second mounting bracket, the method further comprising the steps of:
7 (a) the first secondary actuator applying an actuating force to the first mounting bracket;
8 and
9 (b) the second secondary actuator applying an actuating force to the second mounting
10 bracket.

- 1 17. (original) The method as recited in claim 10, wherein the predetermined phase is
2 approximately 180 degrees to attenuate excitation of an arm torsion mode.

- 1 18. (original) The method as recited in claim 10, wherein the predetermined phase is
2 approximately zero degrees to attenuate excitation of an arm sway mode.